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The Open University of Sri Lanka
B.Sc Degree Programme : Level 05
Final Examination 2008/2009
CSU 3279 : Object Oriented Programming – Paper I
Duration : **Two and Half Hours**

Date : 13/01/2009 Time : 9.30am – 12.00 noon

Answer **Four** Questions **Only.**

Q1.i) Provide one example for each of the following data types. Justify your answer.
a) unsigned char b) int
c) unsigned long int d) float e) char

ii) State whether the following statements are **True** or **False.**
a) double and _Double are different identifiers.
b) *Variable_type Variable_list* is syntactically correct definition.
c) Routines which return values are called functions.
d) Identifiers can be defined immediately before using them in C++.
e) Difference between the number of bytes used to represent 'a' and "a" is two.
f) The key words '*typedef*' and '*enum*' perform the same role.
g) getchar() and putchar(x) library functions are used to manipulate single characters.
h) Bitwise operators can be operated on both integral and floating point numbers.
i) Comma operator has the least precedence.
j) Left shift (<<) operator discards the least significant bit.

iii) Suppose you are given the following expressions.
int i, j, k
float l, m
char n

a) i = j + k b) i = l – k c) double (i)
d) k = n e) l = j + n
Identify the instances that should be occurred in the automatic conversion or cast from the above expressions.

Q2. i) What are the control structures used in C++?

ii) Explain one of those control structures diagrammatically. Provide a sample C++ program using the control structure, you have explained.

iii) Write a C++ program to get the summation S of the following series;
$nd + 2nd^2 + 3nd^3 + ... + n^2d^n$

iv) Distinguish between '*break*' and '*continue*' statements, using examples wherever necessary.

Q3. i) a) Name the storage classes.
b) What is meant by storage classes?

ii) Consider the following two programs. Explain differences between them.

```
#include <iostream.h>
extern int c = 0;
int sum (int, int);
void main()
{
        int x, y, s;
        cin>>x>>y;
        s = sum (x,y);
        cout<<s<<"\n";
        s = sum (x,y);
        cout<<s<<"\n";
}
int sum (int a, int b)
{
        extern int C = 0;
        c = a + b + c;
        return (c);
}
```

Program 1

```
#include <iostream.h>
void main()
(
    int x, y, s;
    cin>>x>>y;
    s = sum (x,y);
    cout<<s<<"\n";
    s = sum (x,y);
    cout<<s<<"\n";
}
static int c = 0;
int sum (int a, int b)
{
    c = a + b + c;
    return (c);
}
```

Program 2

iii)a) What do you mean by overriding parameters?
b) What do you mean by inline functions?
c) Provide a suitable C++ program for overrided inline functions.

Q4. i) What is a structure ?

ii) struct ThreeD { float x, y, z } holds the coordinates of a point in the three dimensional space.
a) Modify the structure adding suitable functions to initialize and display the three dimensional point coordinates.

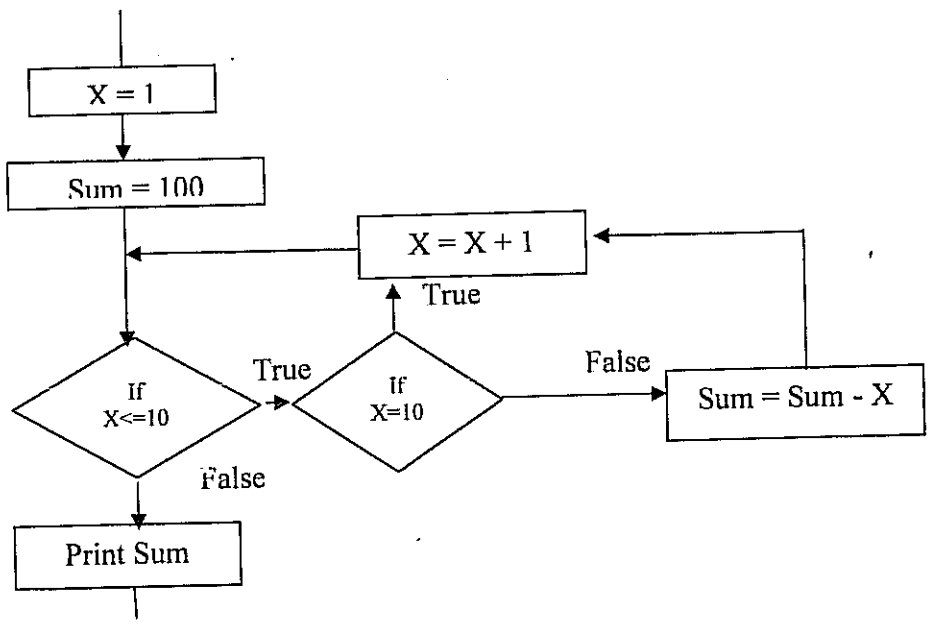
b) Write a main program to test the structure.

iii) a) What are the advantages of using references as function parameters?
b) Write a C++ program to input a time consisting of hours, minutes and seconds into a structure template and display them in the reference notation.

Q5. i) What is a pointer?

ii) Distinguish difference between the following terms.
a) char * const cptr
b) const char *cptr

iii) Consider the following flow chart.



Convert the above flow chart into correct C++ statements. What is the final value of the variable 'sum'?

iii) Write a C++ program to produce the following output. The figure consists of "*" characters. The height should be chosen by the user. For example if the user has chosen 4 as the height the figure should be as follows.

```
**
****
******
********
```

Q6. i) Explain each of the following array definitions briefly.

a) int Marks[10];
b) int Marks[];
c) #define max 10; int Marks[max];.

ii) Write suitable C++ codes for the following tasks.

a) Define two string variables A and B
b) Initialize A to OUSL and B to NAWALA
c) Compare A and B
d) Assign the longer string's length into the variable X.
e) Write the longest string's name X times in the screen.

iii) Write a C++ program to store months of the year and print the month name upon the user response.